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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------------------------|-------------|----------------------|---------------------|------------------|
| 10/602,912 | 06/24/2003 | Bruce A. Rogers | GP-302680 | 2154 |
| 7590 11/02/2004 | | | | |
| CHRISTOPHER DEVRIES | | EXAMINER | | |
| General Motors Corporation | | DOLE, TIMOTHY J | | |
| Legal Staff, Mail Code 482-C23B21 | | | | |
| P.O. Box 300 | | ART UNIT | | PAPER NUMBER |
| Detroit, MI 48265-3000 | | 2858 | | |

DATE MAILED: 11/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/602,912

Applicant(s)

ROGERS ET AL.

Examiner

Timothy J. Dole

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed: after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-15 and 17-20 is/are rejected.
- 7) ☒ Claim(s) 5 and 16 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: ____.

DETAILED ACTION

Claim Objections

1. Claim 12 is objected to because of the following informalities: claim 12 should depend on claim 8 instead of claim 1, for proper antecedent basis. Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 13-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Regarding claims 13 and 18, the phrase "or the like" renders the claim(s) indefinite because the claim(s) include(s) elements not actually disclosed (those encompassed by "or the like"), thereby rendering the scope of the claim(s) unascertainable. See MPEP § 2173.05(d). Claims 14-17 and 19, 20, are rejected for depending on rejected independent claims 13 and 18, respectively.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 8, 10-12, 18 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Bolz et al.

Referring to claims 8 and 18, Bolz et al. discloses a diagnostic method and apparatus suitable for use in an automobile controller comprising: first and second power supply terminals respectively conducting first and second reference voltages (U1) and (U2); a sampling circuit (ADC) coupled to said first and second power supply terminals and having an output terminal for providing sampled values of said first and second reference voltages; and a reference voltage diagnostic circuit (K) having an input terminal coupled to said output terminal of said sampling circuit, wherein said reference voltage diagnostic circuit compares a sampled value of said first reference voltage to a sampled value of said second reference voltage, and indicates a fault in at least one of said first and second reference voltages in response a difference between said sampled value of said first reference voltage and said sampled value of said second reference voltage being greater than a predetermined threshold (column 3, line 42 - column 4, line 3).

Referring to claim 10, Bolz et al. discloses the apparatus as claimed, wherein said reference voltage diagnostic circuit indicates said fault by storing a diagnostic error code in a memory location (column 3, line 66 – column 4, line 3).

Referring to claim 11, Bolz et al. discloses the apparatus as claimed, wherein said reference voltage diagnostic circuit comprises: a central processing unit (μ C) coupled to said output terminal of said sampling circuit; and a memory coupled to said central processing unit for storing an application program having a reference voltage diagnostic

associated therewith which selectively indicates said fault in the first and second reference voltages (column 3, line 39 – column 4, line 3).

Referring to claim 12, Bolz et al. discloses the apparatus as claimed, further comprising first and second power supplies (UB) for providing said first and second reference voltages respectively to said first and second power supply terminals (column 3, lines 3-12).

Referring to claim 20, Bolz et al. discloses the method as claimed wherein said step of indicating comprises the steps of: determining a smaller one of said first and second reference voltages (column 2, lines 22-28); and setting an error flag corresponding to said smaller one of said first and second reference voltages (column 3, line 66 – column 4, line 3).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-4, 6, 7, 13-15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moreau et al. in view of Lau et al.

Referring to claims 1 and 13, Moreau et al. discloses a diagnostic method and apparatus suitable for use in an automobile controller comprising: a power supply terminal (fig. 2 (24)) conducting a reference voltage (column 4, lines 1-4 and column 6,

lines 51-52); a sampling circuit (fig. 2 (38) and (58)) coupled to said power supply terminal and having an output terminal for providing sampled values of said reference voltage (column 4, lines 29-32); and a reference voltage diagnostic circuit (fig. 1 (14)) having an input terminal coupled to said output terminal of said sampling circuit (column 3, lines 44-49), wherein said reference voltage diagnostic circuit indicates a fault in said reference voltage (column 3, lines 12-14 and column 6, lines 51-52) in response to said current sampled value being different from predetermined value by more than a threshold (column 4, lines 60-63).

Moreau et al. does not disclose said reference voltage diagnostic circuit maintains a historical value of said reference voltage over a predetermined time period, compares a current sampled value of said reference voltage to said historical value, and indicates a fault in said reference voltage in response to said current sampled value being different from said historical value by more than a predetermined threshold.

Lau et al. discloses a reference voltage diagnostic circuit that maintains a historical value of a reference voltage over a predetermined time period, compares a current sampled value of said reference voltage to said historical value, and indicates a fault in said reference voltage in response to said current sampled value being different from said historical value by more than a predetermined threshold (column 4, lines 14-40).

Therefore, it would have been obvious to one skilled in the art at the time of the invention to incorporate the reference voltage diagnostic circuit of Lau et al. into the apparatus of Moreau et al. for the purpose of improving monitoring by keeping an

updated version of the reference voltage whereby allowing a more reliable comparison value (column 4, lines 38-40).

Referring to claims 2 and 14, Moreau et al. discloses the method and apparatus as claimed, wherein said sampling circuit comprises: an attenuation circuit (fig. 2 (38)) having an input terminal coupled to said power supply terminal for receiving said reference voltage, and an output terminal for providing a scaled reference voltage (fig. 2); and an analog-to-digital converter (fig. 2 (58)) having an input terminal coupled to said output terminal of said attenuation circuit, and an output terminal for providing said current sample of said reference voltage (fig. 2).

Referring to claim 3, Moreau et al. discloses the apparatus as claimed, wherein said reference voltage diagnostic circuit indicates said fault by storing a diagnostic error code in a memory location (column 2, line 1-7).

Referring to claim 4, Moreau et al. discloses the apparatus as claimed, wherein said reference voltage diagnostic circuit comprises: a central processing unit (fig. 1 (14)) coupled to said output terminal of said sampling circuit (fig. 1); and a memory coupled to said central processing unit for storing an application program having a reference voltage diagnostic, associated therewith which selectively indicates said fault in said reference voltage (column 2, lines 1-23 and column 6, lines 51-52).

Referring to claim 6, Moreau et al. discloses the apparatus as claimed, further comprising a power supply for providing said reference voltage to said power supply terminal (column 2, lines 62-65).

Referring to claim 7, Moreau et al. discloses the apparatus as claimed except wherein said reference voltage diagnostic circuit indicates said fault in said reference voltage in response to either said current sampled value being greater than said historical value by more than a first predetermined threshold or by said current sampled value being less than said historical value by more than a second predetermined threshold.

Lau et al. discloses the reference voltage diagnostic circuit indicates said fault in said reference voltage in response to either said current sampled value being greater than said historical value by more than a first predetermined threshold or by said current sampled value being less than said historical value by more than a second predetermined threshold (column 7, lines 25-50).

Therefore, it would have been obvious to one skilled in the art at the time of the invention to incorporate the reference voltage diagnostic circuit of Lau et al. into the apparatus of Moreau et al. for the same purpose as given in claim 1, above.

Referring to claim 15, Moreau et al. discloses the method as claimed except for the step of calculating said historical value using said current value.

Lau et al. discloses the step of calculating said historical value using said current value (column 4, lines 31-40).

Therefore, it would have been obvious to one skilled in the art at the time of the invention to incorporate the reference voltage diagnostic circuit of Lau et al. into the apparatus of Moreau et al. for the same purpose as given in claim 1, above.

Referring to claim 17, Moreau et al. discloses the method as claimed except wherein said step of calculating said historical value based on said current value comprises the step of averaging all current values over a predetermined time period.

Lau et al. discloses the step of calculating said historical value based on said current value comprises the step of averaging all current values over a predetermined time period (column 4, lines 31-40).

Therefore, it would have been obvious to one skilled in the art at the time of the invention to incorporate the reference voltage diagnostic circuit of Lau et al. into the apparatus of Moreau et al. for the same purpose as given in claim 1, above.

9. Claims 9 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bolz et al. in view of Moreau et al.

Referring to claims 9 and 19, Bolz et al. discloses the method and apparatus as claimed wherein said sampling circuit comprises: an analog-to-digital converter (ADC) having a first input terminal, a second input terminal, and an output terminal coupled to said input terminal of said reference voltage diagnostic circuit (figure).

Bolz et al. does not disclose said sampling circuit comprises: a first attenuation circuit having an input terminal coupled to said first power supply terminal for receiving the first reference voltage, and an output terminal for providing a scaled first reference voltage; a second attenuation circuit having an input terminal coupled to said second power supply terminal for receiving the second reference voltage, and an output terminal for providing a scaled second reference voltage.

Moreau et al. discloses a sampling circuit comprising: a first attenuation circuit (fig. 2 (38)) having an input terminal coupled to said first power supply terminal for receiving the first reference voltage, and an output terminal for providing a scaled first reference voltage (fig. 2); a second attenuation circuit (fig. 2 (40)) having an input terminal coupled to said second power supply terminal for receiving the second reference voltage, and an output terminal for providing a scaled second reference voltage (fig. 2); and an analog-to-digital converter (fig. 2 (58) and (60)) having a first input terminal coupled to said output terminal of said first attenuation circuit, having a second input terminal coupled to said output terminal of said second attenuation circuit, and an output terminal coupled to said input terminal of said reference voltage diagnostic circuit (fig. 2).

Therefore, it would have been obvious to one skilled in the art at the time of the invention to incorporate the sampling circuit of Moreau et al. into the apparatus of Bolz et al. for the purpose of providing a signal to the A/D converter that is easier to work with.

Allowable Subject Matter

10. Claims 5 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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The following patent is cited to show the state of the art with respect to voltage monitors.

USPN 3,663,958 to Crane: This patent shows an apparatus for monitoring a reference voltage using adjustable thresholds.

Conclusion

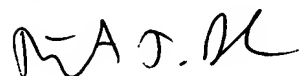
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy J. Dole whose telephone number is (571) 272-2229.

The examiner can normally be reached on Mon. thru Fri. from 8:00 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, N. Le can be reached on (571) 272-2233. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TJD



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